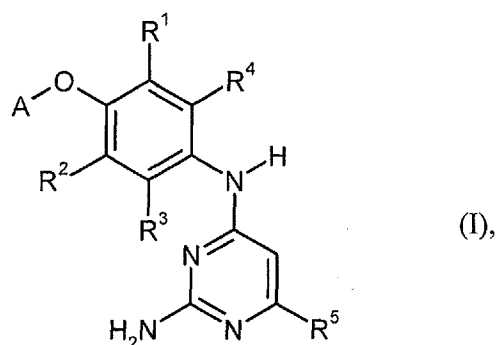


LISTING OF THE CLAIMS

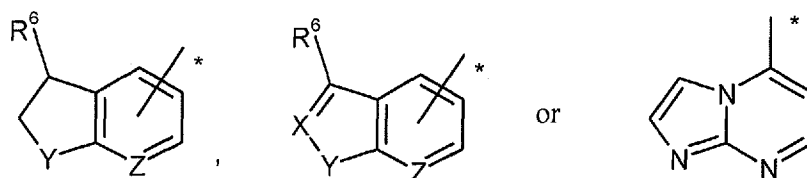
This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A compound of the formula



in which

A represents a radical



in which

X represents N or C-H,

Y represents N-R⁷, O or S

in which

R^7 represents hydrogen, benzyl, phenyl, (C₁-C₆)-alkyl or (C₃-C₈)-cycloalkyl,

where alkyl and cycloalkyl for their part may be substituted by fluorine, hydroxyl, amino, carboxyl, (C₁-C₆)-alkoxy, (C₁-C₆)-alkylamino or morpholinyl,

Z represents N or C-H,

R^6 represents hydrogen, halogen, trifluoromethyl, (C₁-C₆)-alkylamino or W- R^7 ,

in which

W represents NH, O or a bond,

R^7 is as defined above

and

* denotes the point of attachment to the phenolic oxygen,

R^1 and R^2 independently of one another represent hydrogen, halogen or cyano,

R^3 and R^4 independently of one another represent hydrogen, fluorine or chlorine,

R^5 represents a radical selected from the group consisting of:

hydrogen, hydroxyl, halogen, trifluoromethyl,

(C₃-C₈)-cycloalkyl, (C₁-C₆)-alkyl, (C₁-C₆)-alkoxy,

where cycloalkyl, alkyl and alkoxy for their part may be substituted by hydroxyl, carboxyl, (C₁-C₆)-alkoxy, (C₁-C₆)-alkoxycarbonyl, (C₆-C₁₀)-aryl, NR⁸R⁹ or C(=O)NR⁸R⁹,

in which

R⁸ and R⁹ independently of one another represent hydrogen, (C₁-C₈)-alkyl, optionally (C₁-C₆)-alkyl-substituted (C₃-C₆)-cycloalkyl, optionally halogen-substituted (C₆-C₁₀)-aryl or 5- to 10-membered heteroaryl

or

R⁸ and R⁹ together with the nitrogen atom to which they are attached form a 5- or 6-membered heterocycle which may contain a further heteroatom O or N in the ring and which may be substituted by (C₁-C₆)-alkyl, (C₁-C₆)-alkanoyl or (C₁-C₆)-alkoxycarbonyl,

(C₆-C₁₀)-aryl, (C₆-C₁₀)-aryloxy, 5- to 10-membered heteroaryl, 5- to 10-membered heteroaryloxy, 5- to 10-membered heterocyclyl which is attached via a carbon atom,

where aryl, aryloxy, heteroaryl, heteroaryloxy and heterocyclyl for their part may be substituted by halogen, cyano, nitro, carboxyl, amino, trifluoromethyl, optionally hydroxyl-substituted (C₁-C₆)-alkyl, (C₁-C₆)-alkoxy, (C₁-C₆)-alkylamino, (C₁-C₆)-alkanoyl, (C₁-C₆)-alkoxycarbonyl, (C₁-C₆)-alkanoylamino, (C₁-C₆)-alkoxycarbonylamino or 5- or 6-membered heterocyclyl,

NR¹⁰R¹¹

in which

R^{10} and R^{11} independently of one another represent hydrogen, (C₁-C₆)-alkyl, (C₃-C₈)-cycloalkyl, (C₆-C₁₀)-aryl or 5- to 10-membered heteroaryl,

where alkyl and cycloalkyl for their part may be substituted by hydroxyl, (C₁-C₆)-alkoxy, (C₆-C₁₀)-aryl, 5- to 10-membered heteroaryl or $NR^{15}R^{16}$,

in which

R^{15} and R^{16} independently of one another represent hydrogen, (C₁-C₆)-alkyl, (C₃-C₆)-cycloalkyl, (C₆-C₁₀)-aryl or 5- or 6-membered heteroaryl

or

R^{15} and R^{16} together with the nitrogen atom to which they are attached form a 5- or 6-membered heterocycle which may contain a further heteroatom O or N in the ring and which may be substituted by (C₁-C₆)-alkyl, (C₁-C₆)-alkanoyl or (C₁-C₆)-alkoxycarbonyl,

and

aryl and heteroaryl for their part may be substituted by halogen, hydroxyl, amino, cyano, trifluoromethyl, (C₁-C₆)-alkyl, (C₁-C₆)-alkoxy, (C₁-C₆)-alkylamino or (C₁-C₆)-alkanoylamino,

or

R^{10} and R^{11} together with the nitrogen atom to which they are attached form a 4- to 6-membered heterocycle which may contain a further heteroatom O or N in the ring and which may be substituted by fluorine, hydroxyl, carboxyl, 5- to 7-membered heterocyclyl which may contain one or two further heteroatoms N and/or O in the ring and which for its part may be substituted by (C₁-C₄)-alkyl or (C₁-C₄)-alkoxycarbonyl, (C₁-C₄)-alkoxy, optionally hydroxyl-, (C₁-C₄)-alkoxy- or NR¹⁷R¹⁸-substituted (C₁-C₄)-alkyl, (C₁-C₄)-alkanoyl, (C₁-C₄)-alkoxycarbonyl,

where

R^{12} and R^{13} independently of one another represent hydrogen, (C₁-C₆)-alkyl, (C₁-C₄)-alkoxycarbonyl, (C₃-C₈)-cycloalkyl or (C₁-C₄)-alkanoyl

or

R^{12} and R^{13} together with the nitrogen atom to which they are attached form a 5- or 6-membered heterocycle which may contain a further heteroatom O or N in the ring and which may be substituted by (C₁-C₆)-alkyl, (C₁-C₆)-alkanoyl or (C₁-C₆)-alkoxycarbonyl,

and

R^{17} and R^{18} independently of one another represent hydrogen, optionally hydroxyl-substituted (C₁-C₆)-alkyl, (C₃-C₆)-cycloalkyl, (C₆-C₁₀)-aryl or 5- or 6-membered heteroaryl

or

R^{17} and R^{18} together with the nitrogen atom to which they are attached form a 5- or 6-membered heterocycle which may

contain a further heteroatom O or N in the ring and which may be substituted by (C₁-C₆)-alkyl, (C₁-C₆)-alkanoyl or (C₁-C₆)-alkoxycarbonyl,

or

R¹⁰ and R¹¹ together with the nitrogen atom to which they are attached form a 7- to 12-membered bicyclic or tricyclic heterocycle which is fused or spirocyclic and which may have one or two further heteroatoms from the group consisting of N and O in the ring and which may be substituted by fluorine, (C₁-C₄)-alkyl, (C₁-C₄)-alkoxycarbonyl, (C₁-C₄)-alkanoyl or benzyl,

and C(=O)R¹⁴,

in which

R¹⁴ represents (C₁-C₆)-alkoxy, (C₁-C₆)-alkylamino or a 5- to 10-membered mono- or bicyclic heterocycle which is attached via a nitrogen atom, which is fused or spirocyclic and which may have one or two further heteroatoms from the group consisting of N and O in the ring,

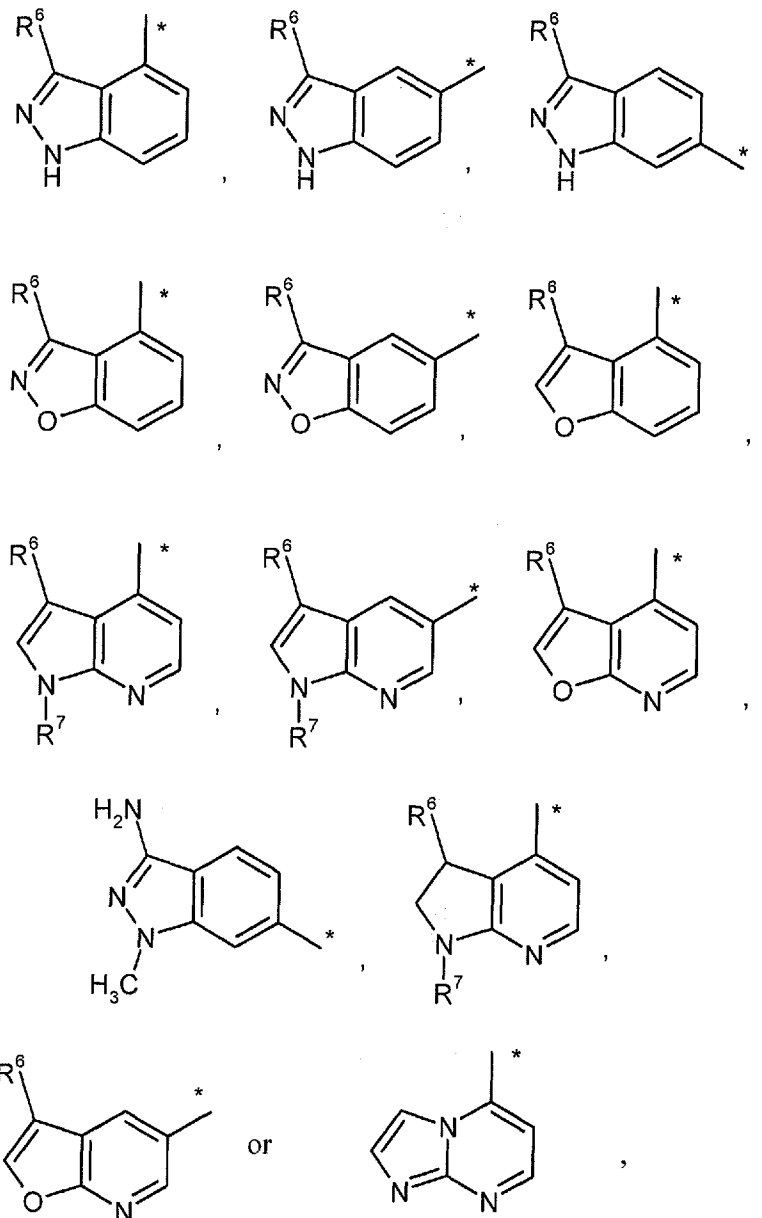
where alkylamino for its part may be substituted by a 5- or 6-membered heterocycle,

or a salt, a hydrate, a hydrate of a salt or a solvate thereof.

2. (Original) The compound as claimed in claim 1

in which

A represents a radical



in which

R⁶ represents hydrogen, (C₁-C₄)-alkyl or NH-R⁷,

R⁷ represents hydrogen or (C₁-C₄)-alkyl

and

* denotes the point of attachment to the phenolic oxygen,

R^1 and R^2 independently of one another represent hydrogen, fluorine or chlorine,

R^3 and R^4 independently of one another represent hydrogen or fluorine,

R^5 represents a radical selected from the group consisting of:

hydrogen, chlorine, (C₃-C₈)-cycloalkyl, (C₁-C₆)-alkyl, (C₁-C₆)-alkoxy,

where alkyl and alkoxy for their part may be substituted by hydroxyl, carboxyl, (C₁-C₄)-alkoxy, (C₁-C₄)-alkoxycarbonyl, NR⁸R⁹ or C(=O)NR⁸R⁹,

in which

R^8 and R^9 independently of one another represent hydrogen, (C₁-C₈)-alkyl, optionally (C₁-C₄)-alkyl-substituted (C₃-C₆)-cycloalkyl, optionally halogen-substituted phenyl or 5- or 6-membered heteroaryl

or

R^8 and R^9 together with the nitrogen atom to which they are attached form a morpholine, piperazine, piperidine or pyrrolidine ring, where the rings for their part may be substituted by (C₁-C₄)-alkyl,

(C₆-C₁₀)-aryl, 5- or 6-membered heteroaryl, 5- or 6-membered heterocyclyl which is attached via a carbon atom,

where aryl, heteroaryl and heterocyclyl for their part may be substituted by halogen, cyano, nitro, carboxyl, amino, trifluoromethyl, optionally hydroxyl-substituted (C₁-C₄)-alkyl, (C₁-C₄)-alkoxy, (C₁-C₄)-alkylamino, (C₁-C₄)-alkanoyl, (C₁-C₄)-alkoxycarbonyl, (C₁-C₄)-alkanoylamino, (C₁-C₄)-alkoxycarbonylamino or 6-membered heterocyclyl,

NR¹⁰R¹¹

in which

R¹⁰ and R¹¹ independently of one another represent hydrogen, (C₁-C₆)-alkyl, (C₃-C₈)-cycloalkyl, phenyl or 5- or 6-membered heteroaryl,

where alkyl and cycloalkyl for their part may be substituted by hydroxyl, (C₁-C₄)-alkoxy, phenyl, 5- or 6-membered heteroaryl or NR¹⁵R¹⁶,

in which

R¹⁵ and R¹⁶ independently of one another represent hydrogen, (C₁-C₄)-alkyl, (C₃-C₆)-cycloalkyl, phenyl or 5- or 6-membered heteroaryl

or

R¹⁵ and R¹⁶ together with the nitrogen atom to which they are attached form a morpholine, piperazine, piperidine or pyrrolidine ring, where the rings for their part may be substituted by (C₁-C₄)-alkyl,

and

phenyl and heteroaryl for their part may be substituted by fluorine, chlorine, hydroxyl, amino, cyano, trifluoromethyl, (C₁-C₄)-alkyl, (C₁-C₄)-alkoxy, (C₁-C₄)-alkylamino or (C₁-C₄)-alkanoylamino,

or

R¹⁰ and R¹¹ together with the nitrogen atom to which they are attached form a 4- to 6-membered heterocycle which may contain a further heteroatom O or N in the ring and which may be substituted by fluorine, hydroxyl, carboxyl, 5- to 7-membered heterocyclyl which may contain one or two further heteroatoms N and/or O in the ring and which for its part may be substituted by (C₁-C₄)-alkyl or (C₁-C₄)-alkoxycarbonyl, (C₁-C₄)-alkoxy, optionally hydroxyl-, (C₁-C₄)-alkoxy- or NR¹⁷R¹⁸-substituted (C₁-C₄)-alkyl, (C₁-C₄)-alkanoyl, (C₁-C₄)-alkoxycarbonyl or NR¹²R¹³,

where

R¹² and R¹³ independently of one another represent hydrogen or (C₁-C₄)-alkyl

or

R¹² and R¹³ together with the nitrogen atom to which they are attached form a 5- or 6-membered heterocycle which may contain a further heteroatom O or N in the ring and which may be substituted by (C₁-C₆)-alkyl, (C₁-C₆)-alkanoyl or (C₁-C₆)-alkoxycarbonyl,

and

R^{17} and R^{18} independently of one another represent hydrogen,
optionally hydroxyl-substituted (C₁-C₄)-alkyl or phenyl

or

R^{17} and R^{18} together with the nitrogen atom to which they are
attached form a pyrrolidine ring,

or

R^{10} and R^{11} together with the nitrogen atom to which they are attached
form a 7- to 12-membered bicyclic or tricyclic heterocycle which is
fused or spirocyclic, which may have one or two further
heteroatoms from the group consisting of N and O in the ring and
which may be substituted by (C₁-C₄)-alkyl, (C₁-C₄)-
alkoxycarbonyl, (C₁-C₄)-alkanoyl or benzyl,

and C(=O) R^{14}

in which

R^{14} represents (C₁-C₆)-alkoxy, (C₁-C₆)-alkylamino or a 5- to 10-
membered mono- or bicyclic heterocycle which is attached via a
nitrogen atom, which is fused or spirocyclic and which may have
one or two further heteroatoms from the group consisting of N and
O in the ring,

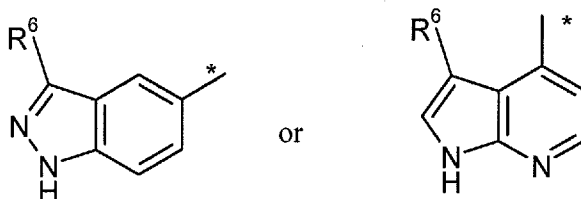
where alkylamino for its part may be substituted by a 5- or 6-
membered heterocyclyl,

or a salt, a hydrate, a hydrate of a salt or a solvate thereof.

3. (Previously presented) The compound as claimed in claim 1

in which

A represents a radical



in which

R⁶ represents hydrogen or methyl

and

* denotes the point of attachment to the phenolic oxygen,

R¹ and R² independently of one another represent hydrogen, fluorine or chlorine,

R³ and R⁴ represent hydrogen,

R⁵ represents a radical selected from the group consisting of:

hydrogen, chlorine, cyclohexyl, (C₁-C₄)-alkyl, (C₁-C₄)-alkoxy,

where alkyl and alkoxy for their part may be substituted by hydroxyl,
carboxyl, (C₁-C₄)-alkoxy, methyloxycarbonyl, ethyloxycarbonyl, NR⁸R⁹
or C(=O)NR⁸R⁹,

in which

R^8 and R^9 independently of one another represent hydrogen, (C_1 - C_8)-alkyl, cyclopropyl, optionally methyl-substituted cyclopentyl or optionally fluorine-substituted phenyl

or

R^8 and R^9 together with the nitrogen atom to which they are attached form a piperidine, 2-methylpiperidine or 2,6-dimethylpiperidine ring,

phenyl, pyridyl, pyrrolyl, piperidin-3-yl, piperidin-4-yl, pyrrolidin-2-yl,

where phenyl, pyridyl and pyrrolyl for their part may be substituted by fluorine, chlorine, bromine, cyano, nitro, trifluoromethyl, methyl, hydroxymethyl, methoxy, dimethylamino or morpholinyl,

and

piperidin-3-yl, piperidin-4-yl and pyrrolidin-2-yl for their part may be substituted by methyl, ethyl, n-propyl, isopropyl, methylcarbonyl or ethylcarbonyl,

$NR^{10}R^{11}$

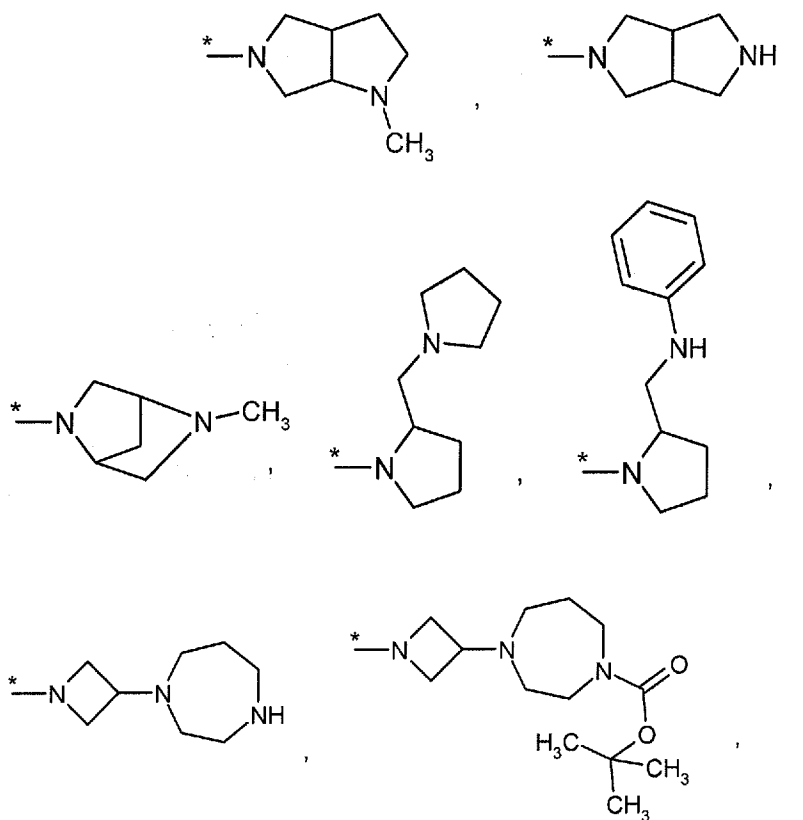
in which

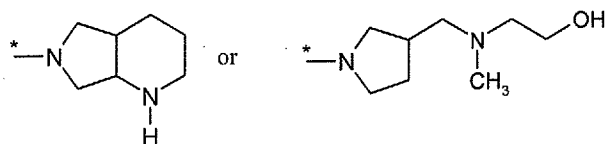
R^{10} and R^{11} independently of one another represent hydrogen, (C_1 - C_4)-alkyl, 3-hydroxypropyl, 2-hydroxycyclohexyl, 2-aminocyclohexyl, phenyl, pyridyl or pyrazolyl,

where phenyl and pyridyl for their part may be substituted by
chlorine, hydroxyl, amino, cyano, methyl or methoxy,

or

R¹⁰ and R¹¹ together with the nitrogen atom to which they are attached
form a piperazine, 3-methylpiperazine, 3,5-dimethylpiperazine, 4-
isobutylpiperazine, morpholine, pyrrolidine, 3-aminopyrrolidine, 3-
methylaminopyrrolidine, 3-(*N,N*-dimethylamino)pyrrolidine,
2-aminomethylpyrrolidine, 3-hydroxypyrrolidine,
2-hydroxymethylpyrrolidine or 2-methoxymethylpyrrolidine ring
or a radical





in which

* denotes the point of attachment to the pyrimidine ring,

and C(=O)R¹⁴

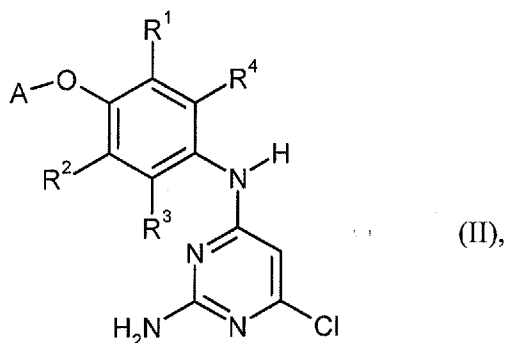
in which

R¹⁴ represents methoxy, piperidinyl-N-ethylamino, piperidinyl or piperazinyl,

or a salt, a hydrate, a hydrate of a salt or a solvate thereof.

4. (Original) A process for preparing compounds as defined in claim 1, characterized in that either

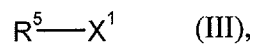
[A] compounds of the formula (II)



in which

A, R¹, R², R³ and R⁴ are as defined in claim 1

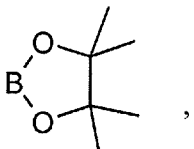
are reacted with compounds of the formula (III)



in which

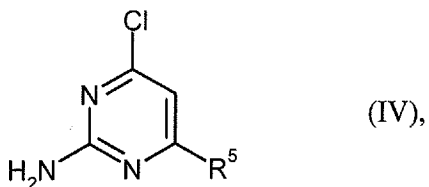
R^5 is as defined in claim 1 and

X^1 represents hydrogen, $B(OH)_2$ or a boronic acid ester such as



or

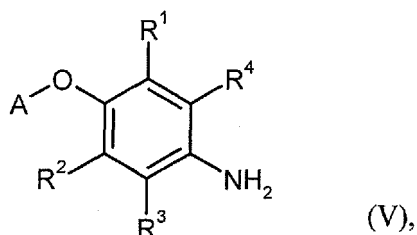
[B] compounds of the formula (IV)



in which

R^5 is as defined in claim 1

are reacted with compounds of the formula (V)



in which

A, R¹, R², R³ and R⁴ are as defined in claim 1.

5. (Canceled)

6. (Canceled)

7. (Canceled)

8. (Canceled)

9. (Previously presented) A pharmaceutical composition comprising a compound as defined in claim 1 and a further active compound.

10. (Previously presented) A pharmaceutical composition comprising a compound as defined in claim 1 in combination with an inert nontoxic pharmaceutically acceptable auxiliary.

11. (Canceled)

12. (New) A method for the treatment of erectile dysfunction in a human or animal, comprising administering to said human or animal, a cardiovascularly effective amount of a compound as defined in claim 1.